

**Standards:**

**GLE 0606.1.8** Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.

**SPI 0606.1.5** Model algebraic expressions using algebra tiles.

✓**0606.1.11** Model algebraic expressions with manipulatives, technology, and pencil and paper.

**State of TN Practice Materials:**

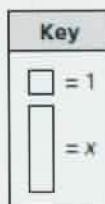
# Tennessee Comprehensive Assessment Program Achievement Test ~ Grade 6 Item Sampler



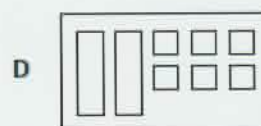
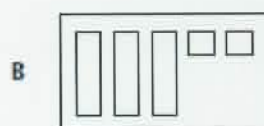
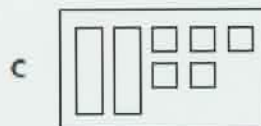
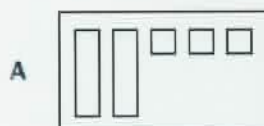
**Reporting Category:** 1 Mathematical Processes

**Performance Indicator:** 0606.1.5 Model algebraic expressions using algebra tiles.

**5** Look at the key below.



Which model below represents  $2x + 3$ ?



Answer: A

Introducing the Lesson:



(You can not add *apples* and *pears*

- they have to be alike to add !!)

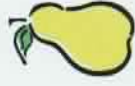
In Algebra, we have numbers AND variables.

Variables are recognized by using letters of the alphabet.

Variables and numbers are NOT ALIKE...just like apples and pears.



+



1

X + 1



X

X



X



+ X



2

=

2x

X

X

X



X



+ X



+ X



?

=

X

1

1

1



X



+ 1



+ 1



+ 1

=

\_\_\_\_\_

# Express Yourself

KEY

Place

Item

Here

= 1

Place

Item

Here

= X

Place

Items

Here

place

sticky note

here

# Student Answer Sheet


## Teaching Tips:

### Vocab:

Be sure to stress the word....EXPRESS

WE are expressing ourselves by writing our own algebraic expressions.

What is the difference between an expression and an equation?

An expression DOES NOT contain an equal sign !!!

When you have more time...

Round 1: Do as stated above...everyone defines their first Express Yourself Workmat

Round 2: Now have them switch the keys and go again (Ex: Round 1: x=jolly ranchers, 1=Hershey kisses; Round 2: x=Hershey kisses, 1=jolly ranchers)



Round 3: Now use REAL Algebra Tiles (Ex:  $x = \blacksquare$ ,  $1 = \blacksquare$  )

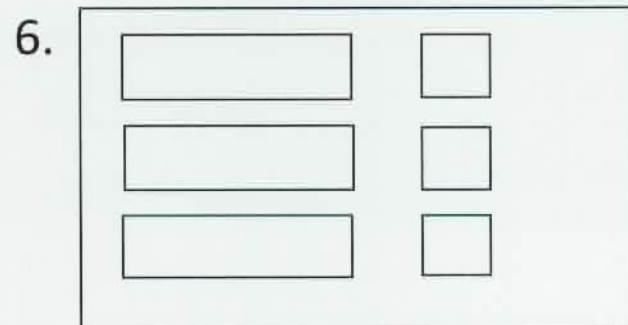
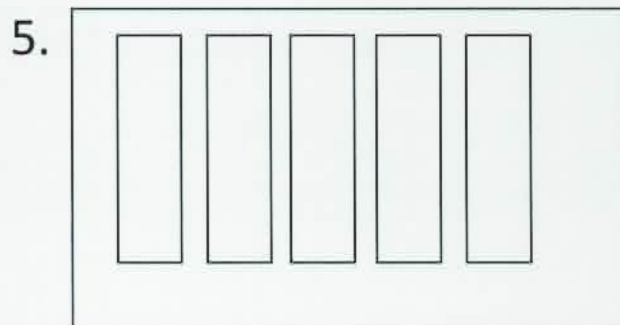
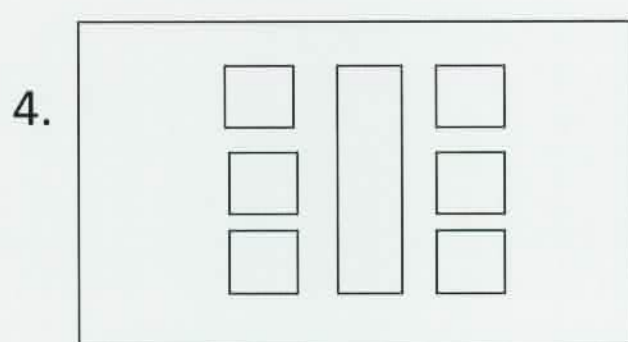
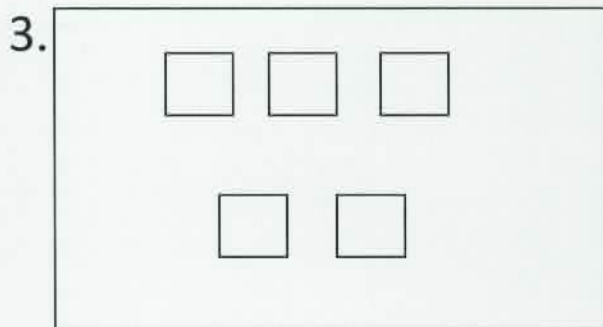
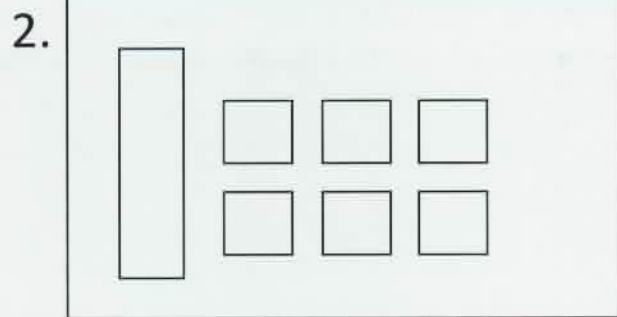
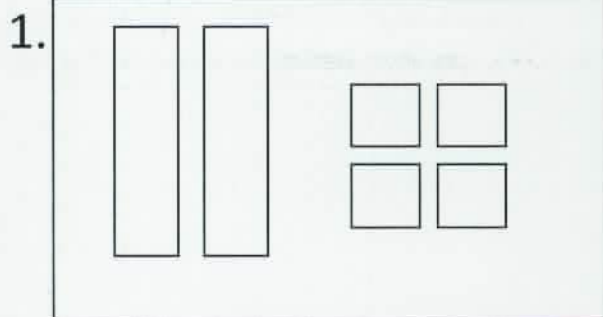
Round 4: Now use REAL Algebra Tiles (Ex:  $x = \blacksquare$ ,  $1 = \blacksquare$  ;  $-x = \blacksquare$ ,  $-1 = \blacksquare$  )



1	1	1	1	1	1	1
1	1	1	1	1	1	1
1	1	x		x		
1	1	x		x		
x	x	$x^2$		$x^2$		
x	x	$x^2$		$x^2$		

Use the key below to illustrate each diagram as an algebraic expression.

Key	
	= 1
	= X





Answers:

1.  $2x + 4$

2.  $x + 6$





3. 5

4.  $x + 6$

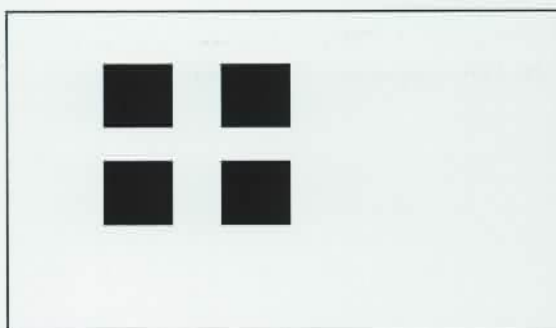
5.  $5x$

6.  $3x + 3$

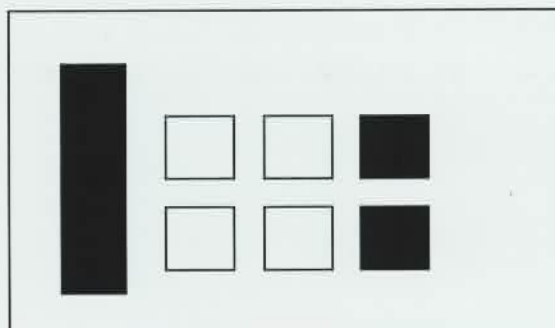
Use the key below to illustrate each diagram as an algebraic expression.

Key			
	= 1		= -1
	= X		= -X

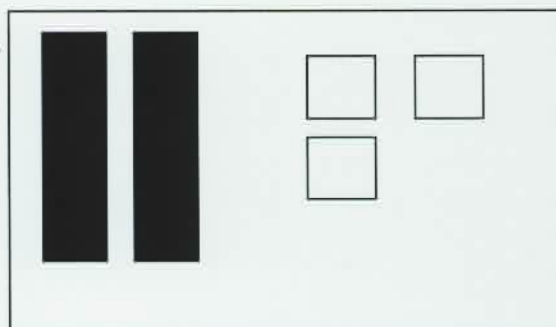
1.



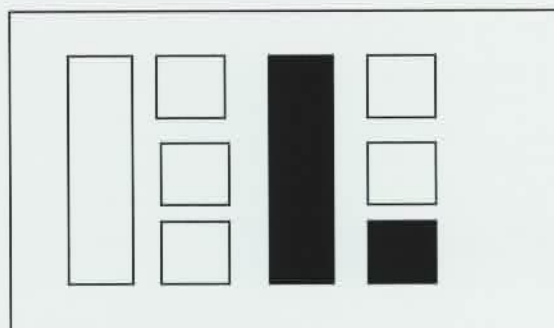
2.



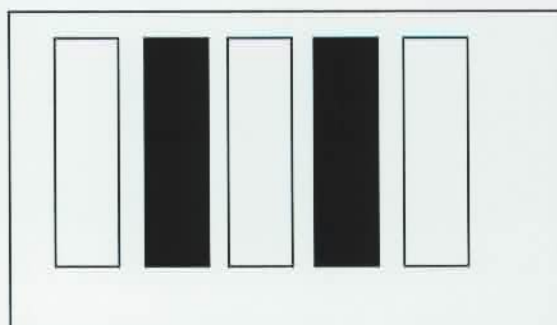
3.



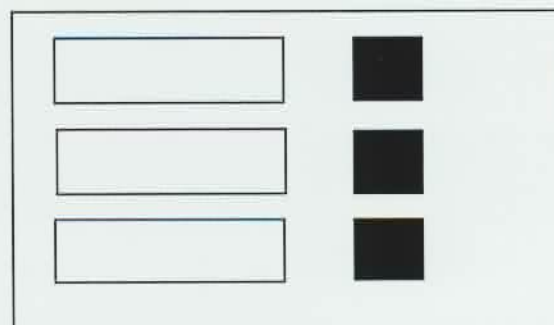
4.



5.



6.



Answers:

1.  $-4$

2.  $-x + 2$

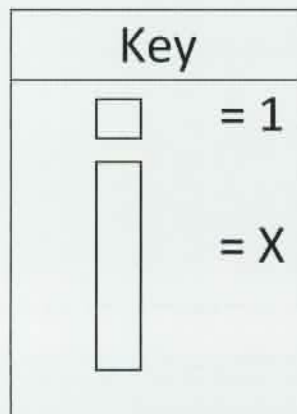
3.  $-2x + 3$

4.  $4$

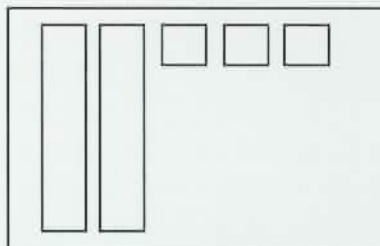
5.  $x$

6.  $3x - 3$

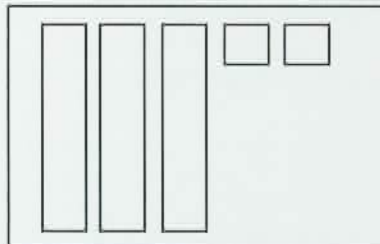
Look at the key below.

\_\_\_\_ 1. Which model below represents  $2x + 3$ ?

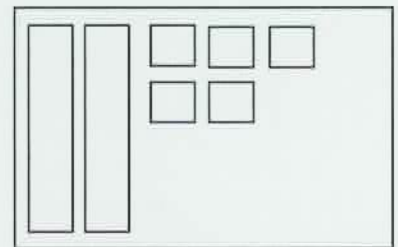
A



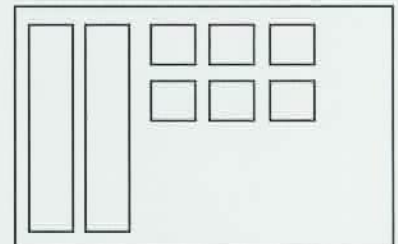
B



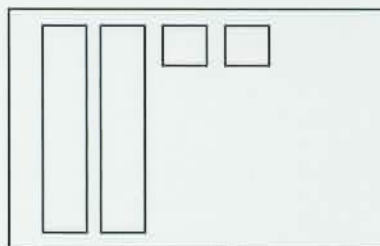
C



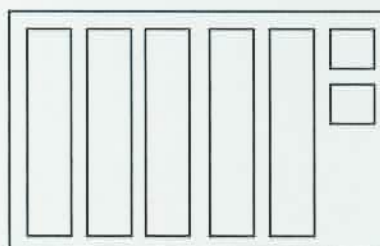
D

\_\_\_\_ 2. Which model below represents  $2x + 5$ ?

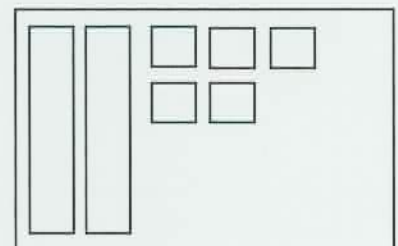
A



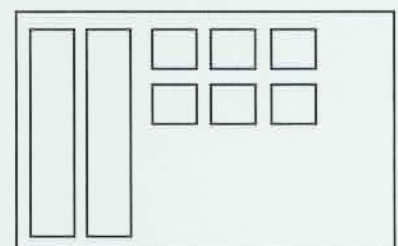
B





C



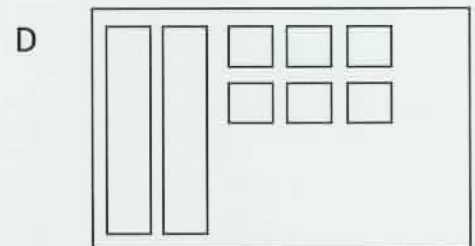
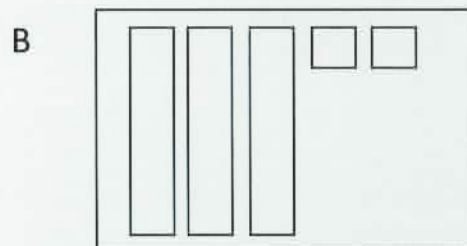
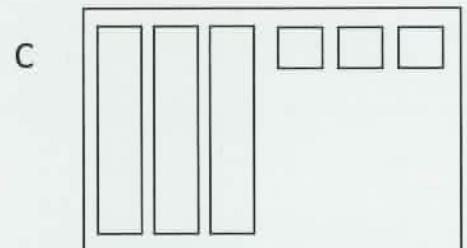
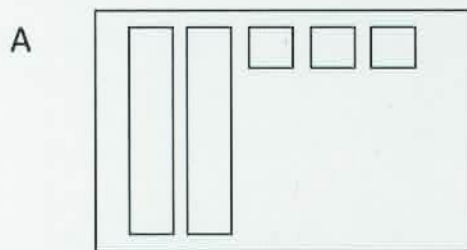
D



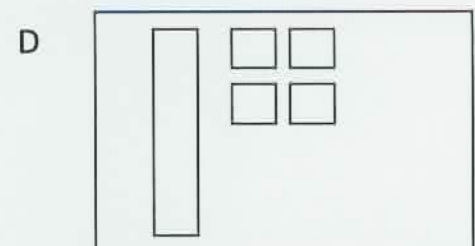
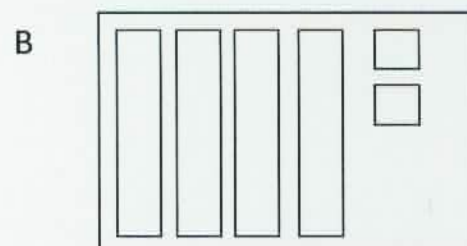
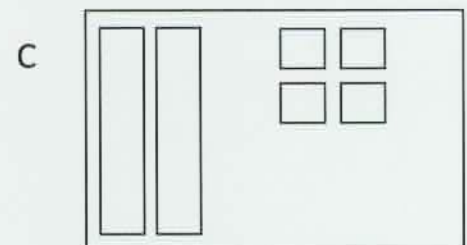
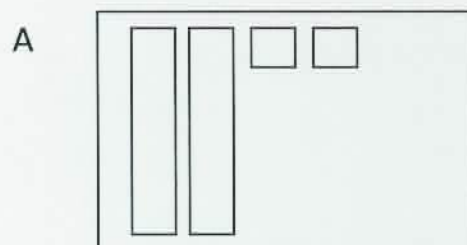
Look at the key below.

Key	
	= 1
	= X

\_\_\_\_ 3. Which model below represents  $3x + 2$ ?



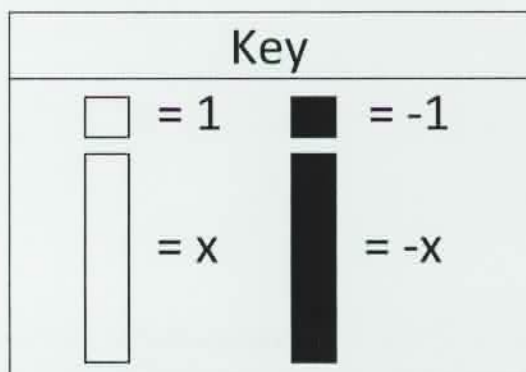
\_\_\_\_ 4. Which model below represents  $x + 4$ ?



TCAP – Quiz #2 (Algebra Tiles)

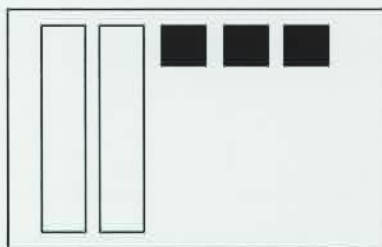
Name \_\_\_\_\_

Look at the key below.

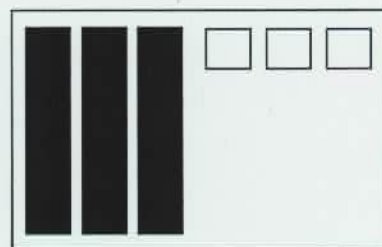


\_\_\_\_ 1. Which model below represents  $3x - 2$ ?

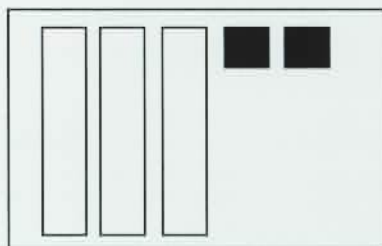
A



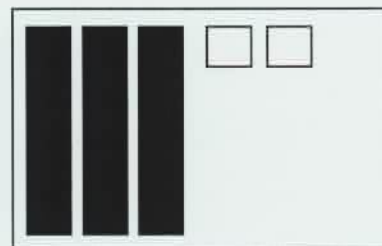
C



B

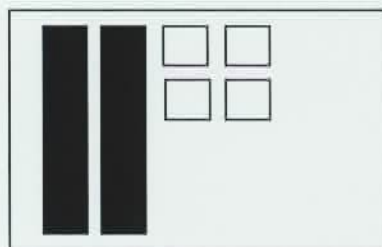


D

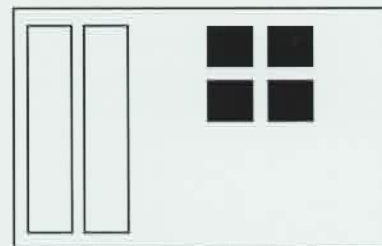


\_\_\_\_ 2. Which model below represents  $-2x + 4$ ?

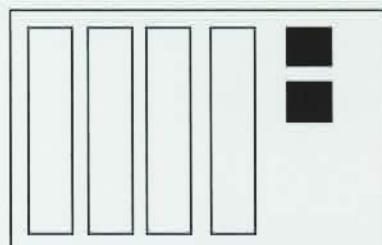
A



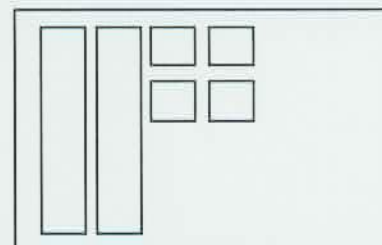
C







B



D

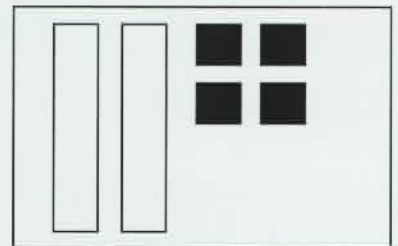


Look at the key below.

Key			
	$= 1$		$= -1$
	$= x$		$= -x$

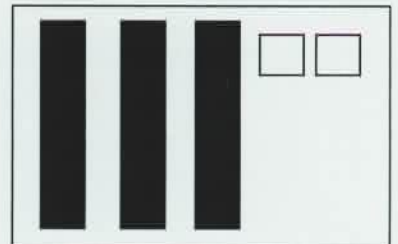
\_\_\_\_ 3. Which expression is represented by the model?

- A*  $-2x+4$
- B*  $x+(-4)$
- C*  $2x+(-4)$
- D*  $4x+2$



\_\_\_\_ 4. Which expression is represented by the model?

- A*  $-3x+2$
- B*  $2x+(-3)$
- C*  $-2x+(3)$
- D*  $3x+(-2)$





**Answers:**

Quiz #1

1. A
2. C
3. B
4. D

Quiz #2

1. B
2. A
3. C
4. A